

TRAFFIC CONTROL BARRIERS

This invention relates to barriers for controlling the flow of traffic.

Barriers for preventing a vehicle entering a designated area are well known. These barriers typically include, for example, permanent walls and bollards, neither of which are readily deployable. Where deployable barriers are employed, these typically comprise a series of heavy concrete blocks spaced apart by a distance less than the width of a vehicle whose access is to be prevented. These blocks are difficult to transport and manoeuvre in place because of their shape and weight, are unsightly and can often be displaced sufficiently to enable a vehicle to pass.

Safety control barriers for redirecting traffic on, for example, a motorway under repair, also typically comprise a series of individual elongate blocks spaced apart to define one or more sides of a lane to be followed by traffic. Such blocks are typically rectangular in plan view and are, on occasions, connected together at their ends by rods, chains or other similar components.

The present invention sets out to provide traffic control barriers which are more readily transportable and manoeuvrable and which are more efficient in controlling traffic flow than presently available barriers.

In one aspect, the invention provides a traffic control barrier which comprises at least two side-by-side elongate solid blocks each housed within a metallic casing whose sides are detachably connected together by one or more metallic connectors, the longitudinal axis of the or each connector extending in a direction transverse to the longitudinal axis of each block.

In plan view, each block may be generally elliptical or rectangular.

Pads of a compressible material may be positioned below each block. These pads may be positioned at locations at or adjacent to the block ends. Additional pads may be positioned at locations intermediate the block ends. In a preferred embodiment, neighbouring pads are spaced apart such that their total length is less than that of the respective block.

The underside of each block and/or each pad may be formed with a series of ridges or grooves to increase the contact stress between the block and the surface on which it is mounted.

Preferably, the blocks are produced wholly or predominantly from a cementitious material, e.g. concrete. In such an arrangement, the upstanding sides of a concrete block may be housed within a metallic casing. The casing may be produced from, for example, steel or aluminium. One or more metal rods may be welded to opposed internal surfaces of the metallic casing such that the or each rod extends across the width of the casing with its ends secured to the opposed surfaces. The longitudinal axis of the or each welded rod may be substantially normal to the longitudinal axis of the casing. The rods may be welded at their ends to the casing walls by a friction welding technique.

In another aspect, the invention provides a traffic control barrier which comprises at least two side-by-side elongate solid blocks whose sides are detachably connected together by one or more metallic connectors, the longitudinal axis of the or each connector extending in a direction transverse to the longitudinal axis of each block.

In a further aspect, the invention provides a method of producing a dismountable traffic control barrier which comprises transporting to a given site two or more elongate blocks, positioning these blocks side-by-side across an area from which traffic is to be excluded, and securing each

block to the or each neighbouring block by one or more metallic connectors in a detachable manner.

Each block may be produced by casting a cementitious material into an elongate metallic housing whose side walls are interconnected by metallic rods or bars which extend in a direction transverse (e.g. substantially normal) to the longitudinal axis of the housing.

The invention will now be described, by way of example only, with reference to the accompanying diagrammatic drawings in which:-

Figure 1 is a schematic view of a traffic control barrier in accordance with the invention positioned across a road surface;

Figure 2 is a plan view of the upper surface of a block which forms part of the vehicle barrier illustrated in Figure 1;

Figure 3 is a plan view of the under-surface of the block illustrated in Figure 2;

Figure 4 is side view of the block illustrated in Figures 2 and 3; and

Figure 5 is a side view in section of a metallic connector used to connect neighbouring pairs of the blocks illustrated in Figures 1 to 4.

As will be seen from Figure 1, a traffic control barrier in accordance with the invention comprises a plurality of side-by-side elongate concrete blocks 1 spaced apart by a distance significantly less than that of a vehicle whose progress is to be controlled. As shown, the blocks are generally elliptical in plan view and are positioned with their rounded ends directed towards any traffic which may approach the barrier. Thus, an entire roadway or entrance can effectively be sealed off from a flow of traffic by

suitable positioning of the barrier blocks. Other elongate shapes, such as rectangular or diamond, can be adopted for the individual blocks.

As will be seen from Figures 2 to 4, each block comprises a central mass of concrete 2 enveloped in a steel casing 3 formed from steel plates 4, 5. Rigid steel bars 6 extend between the inner surfaces of the plates 4, 5 with their ends welded to the plates by, for example, a friction welding technique. At their side edges, the plates are welded to upstanding metal tubes 7 to define the generally elliptical shaping for the blocks.

Open ended tubes 8 extend through the blocks with their open ends projecting a small distance from the casing outer surface. These open ends may be selectively closed by suitably dimensioned removable caps (not shown). Lifting hoops 9 (see Figure 4) project from the upper surface of each block to assist manoeuvring and positioning of the blocks in use. Each lifting hoop includes an anchorage 11 embedded in the concrete mass.

As will be seen from Figure 3, ribbed rubber pads 12 are secured to the under-surface of each block to increase the contact stress between the blocks and the road surface on which it is mounted. The undersurface of the pads may comprise a material having a high coefficient of friction and the pads 12 preferably extend over the full width of the block under-surface and are positioned towards each block end. Additional pads may be provided.

Manufacture of the blocks is achieved by friction welding the steel bars 6 to the inner surface of each steel plate 4, 5 and welding the plate ends to the metal tubes 7. The tubes 8 are positioned between suitably dimensioned openings formed in the plate surfaces and the entire central area of each block is filled with concrete. Prior to casting of the concrete, the lifting hoop anchorages 11 are positioned as shown in Figure 2. Once the concrete is set, the ribbed pads 12 are secured to the under-surface of

each block and each lifting hoop 9 fitted to its anchorage. For additional weight, iron ingots or the like may be positioned within the casing before casting of the concrete.

Typically, the height of each block is between 800 and 1000mm with the tubes 8 positioned approximately at mid-height of the plates 4, 5. The length of each block is typically between 2000mm and 4000mm and the maximum width of each block is typically between 450 and 650mm.

Connectors for detachably joining the blocks together are illustrated in Figure 5. These connectors include the metal tubes 8 which are embedded within the concrete mass of the blocks. Each tube 8 has a bore for receiving one or a series of connector rods 15. Each rod is formed at its ends with external threads to receive an internally threaded tubular end-piece 16 positioned one at each end of a metallic connecting member 17. The connector rod 15 extends within the metal tube 8 by a distance of at least $1.5 \times$ tube internal diameter. Flats may be formed on each connecting member to assist the connection procedure.

When a traffic control barrier is required, several blocks are transported to site and off-loaded from the carrying vehicle using a conventional lifting device which cooperates with the hoops 9. As a block is positioned, one or a series of threaded rods 15 are inserted into the bore of the block and the female end of a connecting member 16 is secured to the exposed end of the outermost threaded rod. A second block is then positioned close to the first block and the other female end of the connecting member is secured to the bore mounted threaded rod of that block. This process is repeated until the entire road section to which traffic access is to be refused is covered. To remove the barrier, this process is repeated in reverse.

It will be appreciated that the foregoing is merely exemplary of traffic control barriers in accordance with the invention and that

modifications can readily be made thereto without departing from the scope of the invention as set out in the accompanying claims.